CLAIMS

What is claimed is:

1. A method of modulating the ability of a cell to affect the glycosylation state of a target selected from the group consisting of a lipid and a polypeptide, the method comprising modulating the activity of an enzyme selected from the group consisting of 47169 protein and 33935 protein in the cell, whereby the ability of the cell to affect the glycosylation state of the target is modulated.

2. The method of claim 1, wherein the enzyme is 47169 protein, and wherein the activity is inhibited by inhibiting expression of the 47169 gene in the cell.

3. The method of claim 2, wherein expression is inhibited by administering to the cell an antisense oligonucleotide that hybridizes under stringent conditions with a transcript of the 47169 gene.

4. The method of claim 3, wherein the antisense oligonucleotide comprises at least 15 nucleotide residues.

5. The method of claim 3, wherein the transcript is an mRNA.

6. The method of claim 2, wherein expression is inhibited by administering to the cell an antisense oligonucleotide that hybridizes under stringent conditions with a polynucleotide having the nucleotide sequence SEQ ID NO: 1.

7. The method of claim 2, wherein expression is inhibited by administering to the cell an antisense oligonucleotide that hybridizes under stringent conditions with a polynucleotide having the nucleotide sequence SEQ ID NO: 3.

8. The method of claim 1, wherein the enzyme is 47169 protein, and wherein the activity of 47169 protein is inhibited without significantly affecting 47169 gene expression in the cell.

9. The method of claim 1, wherein the enzyme is 47169 protein, and wherein the activity is inhibited by administering to the cell an agent which inhibits an activity of 47169 protein.

10. The method of claim 9, wherein the agent is an antibody which specifically binds with 47169 protein.

11. The method of claim 1, wherein the enzyme is 47169 protein, and wherein the activity is enhanced by administering to the cell an agent which enhances expression of 47169 in the cell.

12. The method of claim 11, wherein the agent is an expression vector encoding 47169 protein.

13. The method of claim 1, wherein the enzyme is 33935 protein, and wherein the activity is inhibited by inhibiting expression of the 33935 gene in the cell.

14. The method of claim 13, wherein expression is inhibited by administering to the cell an antisense oligonucleotide that hybridizes under stringent conditions with a transcript of the 33935 gene.

15. The method of claim 14, wherein the antisense oligonucleotide comprises at least 15 nucleotide residues.

16. The method of claim 14, wherein the transcript is an mRNA.

17. The method of claim 13, wherein expression is inhibited by administering to the cell an antisense oligonucleotide that hybridizes under stringent conditions with a polynucleotide having the nucleotide sequence SEQ ID NO: 11.

18. The method of claim 13, wherein expression is inhibited by administering to the cell an antisense oligonucleotide that hybridizes under stringent conditions with a polynucleotide having the nucleotide sequence SEQ ID NO: 13.

19. The method of claim 1, wherein the enzyme is 33935 protein, and wherein the activity of 33935 protein is inhibited without significantly affecting 33935 gene expression in the cell.

20. The method of claim 1, wherein the enzyme is 33935 protein, and wherein the activity is inhibited by administering to the cell an agent which inhibits an activity of 33935 protein.

21. The method of claim 20, wherein the agent is an antibody which specifically binds with 33935 protein.

22. The method of claim 1, wherein the enzyme is 33935 protein, and wherein the activity is enhanced by administering to the cell an agent which enhances expression of 33935 in the cell.

23. The method of claim 22, wherein the agent is an expression vector encoding 33935 protein.

24. The method of claim 1, wherein the cell is an endothelial cell selected from the group consisting of a lung cell, a breast cell, and a colon cell.

25. The method of claim 24, wherein the cell is a tumor cell.

26. The method of claim 24, wherein the cell is in the body of a human.

27. A method for assessing whether a test compound is useful for modulating at least one phenomenon selected from the group consisting of non-covalent binding between a protein and one of a cell, a virus, and another protein; cell signaling; cell differentiation; tumorigenesis; cell adhesion; cell motility; cell-to-cell interaction; cell invasivity; cell proliferation; gene transcription; and an immune response, the method comprising:

a) adding the test compound to a first composition comprising one of

i) a polypeptide that has an amino acid sequence at least 90% identical to SEQ ID NO: 2 and that exhibits a 47169 activity and

ii) a polypeptide that has an amino acid sequence at least 90% identical to SEQ ID NO: 12 and that exhibits a 33935 activity; and

b) comparing the activity in the first composition and in a second composition that is substantially identical to the first composition, except that it lacks the test compound,

whereby a difference in the activity in the first and second compositions is an indication that the test compound is useful for modulating the phenomenon.

28. The method of claim 27, wherein the activity is a glycosyl transferase activity.

29. The method of claim 28, wherein the activity is ability to transfer an N-acetylgalactosamine moiety from uridine diphosphate to a hydroxyl moiety of a serine or threonine residue of a protein.

30. The method of claim 27, wherein the composition comprises a cell which comprises a nucleic acid encoding either a 47169 protein or a 33935 protein.

31. A method for assessing whether a test compound is useful for modulating at least one phenomenon selected from the group consisting of non-covalent binding between a protein and one of a cell, a virus, and another protein; cell signaling; cell differentiation; tumorigenesis; cell adhesion; cell motility; cell-to-cell interaction; cell invasivity; cell proliferation; gene transcription; and an immune response, the method comprising:

a) adding the test compound to a composition comprising a cell which comprises a nucleic acid that encodes one of

i) a polypeptide that has an amino acid sequence at least 90% identical to SEQ ID NO: 2 and exhibits a 47169 activity; and

ii) a polypeptide that has an amino acid sequence at least 90% identical to SEQ ID NO: 12 and exhibits a 33935 activity; and

b) comparing the activity in the first composition and in a second composition that is substantially identical to the first composition, except that it lacks the test compound,

whereby a difference in the activity in the first and second compositions is an indication that the test compound is useful for modulating the phenomenon.

32. A method of making a pharmaceutical composition for modulating at least one phenomenon selected from the group consisting of non-covalent binding between a protein and one of a cell, a virus, and another protein; cell signaling; cell differentiation; tumorigenesis; cell adhesion; cell motility; cell-to-cell interaction; cell invasivity; cell proliferation; gene transcription; and an immune response, the method comprising:

a) selecting a test compound useful for modulating the phenomenon according to the method of claim 27; and

b) combining the test compound with a pharmaceutically acceptable carrier in order to make the pharmaceutical composition.

33. A method of modulating, in a human, at least one phenomenon selected from the group consisting of non-covalent binding between a protein and one of a cell, a virus, and another protein; cell signaling; cell differentiation; tumorigenesis; cell adhesion; cell motility; cell-to-cell interaction; cell invasivity; cell proliferation; gene transcription; and an immune response, the method comprising administering the pharmaceutical composition of claim 32 to the human in an amount effective to modulate the phenomenon.

34. A method for identifying a compound useful for modulating at least one phenomenon selected from the group consisting of non-covalent binding between a protein and one of a cell, a virus, and another protein; cell signaling; cell differentiation; tumorigenesis; cell adhesion; cell motility; cell-to-cell interaction; cell invasivity; cell proliferation; gene transcription; and an immune response, the method comprising:

a) contacting the test compound and a polypeptide, or with a cell that expresses the polynucleotide, wherein the polypeptide is selected from the group consisting of

i) a polypeptide which is encoded by a nucleic acid molecule comprising a portion having a nucleotide sequence which is at least 90% identical to one of SEQ ID NOs: 1, 3, 11, and 13; and

ii) a fragment of a polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NOs: 2 and 12, wherein the fragment comprises at least 25 contiguous amino acid residues of one of SEQ ID NOs: 2 and 12; and

b) determining whether the polypeptide binds with the test compound,

whereby binding of the polypeptide and the test compound is an indication that the test compound is useful for modulating the phenomenon.

35. The method of claim 34, wherein the polypeptide exhibits an epitope in common with a polypeptide having the amino acid sequence of one of SEQ ID NOs: 2 and 12.